

What is claimed is:

1. An assay method using a biochemical analysis unit, comprising the steps of:

5 i) obtaining a biochemical analysis unit provided with a plurality of porous adsorptive regions, to which ligands or receptors have been bound respectively, and

ii) performing a specific binding detecting process comprising the steps of:

10 a) forcibly causing a receptor or a ligand to flow such that the receptor or the ligand flows across each of the porous adsorptive regions of the biochemical analysis unit, the receptor or the ligand being thus subjected to specific binding with the ligands or the receptors, each of which has been bound to one of the porous adsorptive regions of the biochemical analysis unit, the receptor or the ligand being thereby specifically bound to at least one of the ligands, each of which has been bound to one of the porous adsorptive regions of the biochemical analysis unit, or at least one of the receptors, each of which has been bound to one of the porous adsorptive regions of the biochemical analysis unit, and

15 b) detecting the receptor or the ligand, which has thus been specifically bound to at least one of the ligands or at least one of the receptors, by the utilization of a labeling substance,

20 25 a liquid being forcibly caused to flow, such that the

liquid flows across each of the porous adsorptive regions of the biochemical analysis unit, during the specific binding detecting process,

5 wherein a liquid, which has been subjected to gas content decreasing processing for decreasing the content of a dissolved gas, is employed as the liquid, which is forcibly caused to flow.

2. An assay method using a biochemical analysis unit, comprising the steps of:

10 i) obtaining a biochemical analysis unit provided with a plurality of porous adsorptive regions, to which ligands or receptors have been bound respectively, and

 ii) performing a specific binding detecting process comprising the steps of:

15 a) forcibly causing a receptor or a ligand to flow such that the receptor or the ligand flows across each of the porous adsorptive regions of the biochemical analysis unit, the receptor or the ligand being thus subjected to specific binding with the ligands or the receptors, each of which has been bound to one of the porous adsorptive regions of the biochemical analysis unit, the receptor or the ligand being thereby specifically bound to at least one of the ligands, each of which has been bound to one of the porous adsorptive regions of the biochemical analysis unit, or at least one of the receptors, each of which has been bound to one of the porous adsorptive

regions of the biochemical analysis unit, and

b) detecting the receptor or the ligand, which has thus been specifically bound to at least one of the ligands or at least one of the receptors, by the utilization of a labeling substance,

a liquid being forcibly caused to flow, such that the liquid flows across each of the porous adsorptive regions of the biochemical analysis unit, during the specific binding detecting process,

10 wherein bubble removing processing for removing bubbles, which are present in the liquid, from the liquid is performed during the flowing of the liquid.

3. An assay method using a biochemical analysis unit, comprising the steps of:

15 i) obtaining a biochemical analysis unit provided with a plurality of porous adsorptive regions, to which ligands or receptors have been bound respectively, and

ii) performing a specific binding detecting process comprising the steps of:

20 a) forcibly causing a receptor or a ligand to flow such that the receptor or the ligand flows across each of the porous adsorptive regions of the biochemical analysis unit, the receptor or the ligand being thus subjected to specific binding with the ligands or the receptors, each of which has been bound to one of the porous adsorptive regions of the

biochemical analysis unit, the receptor or the ligand being thereby specifically bound to at least one of the ligands, each of which has been bound to one of the porous adsorptive regions of the biochemical analysis unit, or at least one of the receptors, each of which has been bound to one of the porous adsorptive regions of the biochemical analysis unit, and

b) detecting the receptor or the ligand, which has thus been specifically bound to at least one of the ligands or at least one of the receptors, by the utilization of a labeling substance,

a liquid being forcibly caused to flow, such that the liquid flows across each of the porous adsorptive regions of the biochemical analysis unit, during the specific binding detecting process,

15 wherein bubble dissolving processing for dissolving
bubbles, which are present in the liquid, is performed during
the flowing of the liquid.

4. A method as defined in Claim 1 wherein the specific binding detecting process comprises the steps of:

20 a) forcibly causing a reaction liquid containing a
labeled receptor or a labeled ligand, which has been labeled
with a labeling substance, to flow such that the reaction liquid
flows across each of the porous adsorptive regions of the
biochemical analysis unit provided with the plurality of the
25 porous adsorptive regions, to which the ligands or the receptors

have been bound respectively, the labeled receptor or the labeled ligand being thus subjected to the specific binding with the ligands or the receptors, each of which has been bound to one of the porous adsorptive regions of the biochemical analysis unit, the labeled receptor or the labeled ligand being thereby specifically bound to at least one of the ligands, each of which has been bound to one of the porous adsorptive regions of the biochemical analysis unit, or at least one of the receptors, each of which has been bound to one of the porous adsorptive regions of the biochemical analysis unit, and

10 b) detecting the labeled receptor or the labeled ligand, which has thus been specifically bound to at least one of the ligands or at least one of the receptors, by the utilization of the labeling substance.

15 5. A method as defined in Claim 2 wherein the specific binding detecting process comprises the steps of:

20 a) forcibly causing a reaction liquid containing a labeled receptor or a labeled ligand, which has been labeled with a labeling substance, to flow such that the reaction liquid flows across each of the porous adsorptive regions of the biochemical analysis unit provided with the plurality of the porous adsorptive regions, to which the ligands or the receptors have been bound respectively, the labeled receptor or the labeled ligand being thus subjected to the specific binding with the ligands or the receptors, each of which has been bound to one

of the porous adsorptive regions of the biochemical analysis unit, the labeled receptor or the labeled ligand being thereby specifically bound to at least one of the ligands, each of which has been bound to one of the porous adsorptive regions of the biochemical analysis unit, or at least one of the receptors, each of which has been bound to one of the porous adsorptive regions of the biochemical analysis unit, and

5 b) detecting the labeled receptor or the labeled ligand, which has thus been specifically bound to at least one of the ligands or at least one of the receptors, by the utilization 10 of the labeling substance.

6. A method as defined in Claim 3 wherein the specific binding detecting process comprises the steps of:

15 a) forcibly causing a reaction liquid containing a labeled receptor or a labeled ligand, which has been labeled with a labeling substance, to flow such that the reaction liquid flows across each of the porous adsorptive regions of the biochemical analysis unit provided with the plurality of the porous adsorptive regions, to which the ligands or the receptors 20 have been bound respectively, the labeled receptor or the labeled ligand being thus subjected to the specific binding with the ligands or the receptors, each of which has been bound to one of the porous adsorptive regions of the biochemical analysis unit, the labeled receptor or the labeled ligand being thereby 25 specifically bound to at least one of the ligands, each of which

has been bound to one of the porous adsorptive regions of the biochemical analysis unit, or at least one of the receptors, each of which has been bound to one of the porous adsorptive regions of the biochemical analysis unit, and

5 b) detecting the labeled receptor or the labeled ligand, which has thus been specifically bound to at least one of the ligands or at least one of the receptors, by the utilization of the labeling substance.

7. A method as defined in Claim 1 wherein the specific 10 binding detecting process comprises the steps of:

15 a) subjecting the receptor or the ligand to the specific binding with the ligands or the receptors, each of which has been bound to one of the porous adsorptive regions of the biochemical analysis unit, the receptor or the ligand being thereby specifically bound to at least one of the ligands, each 20 of which has been bound to one of the porous adsorptive regions of the biochemical analysis unit, or at least one of the receptors, each of which has been bound to one of the porous adsorptive regions of the biochemical analysis unit,

25 b) forcibly causing a reaction liquid containing a labeled body, which has been labeled with a labeling substance, to flow such that the reaction liquid flows across each of the porous adsorptive regions of the biochemical analysis unit, the labeled body being thus specifically bound to the receptor or the ligand having been specifically bound to at least one of

the ligands, each of which has been bound to one of the porous adsorptive regions of the biochemical analysis unit, or at least one of the receptors, each of which has been bound to one of the porous adsorptive regions of the biochemical analysis unit,

5 and

c) detecting the receptor or the ligand, which has been specifically bound to at least one of the ligands or at least one of the receptors, by the utilization of the labeled body.

10 8. A method as defined in Claim 2 wherein the specific binding detecting process comprises the steps of:

a) subjecting the receptor or the ligand to the specific binding with the ligands or the receptors, each of which has been bound to one of the porous adsorptive regions of the biochemical analysis unit, the receptor or the ligand being thereby specifically bound to at least one of the ligands, each of which has been bound to one of the porous adsorptive regions of the biochemical analysis unit, or at least one of the receptors, each of which has been bound to one of the porous adsorptive regions of the biochemical analysis unit,

15 20 25 b) forcibly causing a reaction liquid containing a labeled body, which has been labeled with a labeling substance, to flow such that the reaction liquid flows across each of the porous adsorptive regions of the biochemical analysis unit, the labeled body being thus specifically bound to the receptor or

the ligand having been specifically bound to at least one of the ligands, each of which has been bound to one of the porous adsorptive regions of the biochemical analysis unit, or at least one of the receptors, each of which has been bound to one of the porous adsorptive regions of the biochemical analysis unit,
5 and

c) detecting the receptor or the ligand, which has been specifically bound to at least one of the ligands or at least one of the receptors, by the utilization of the labeled
10 body.

9. A method as defined in Claim 3 wherein the specific binding detecting process comprises the steps of:

a) subjecting the receptor or the ligand to the specific binding with the ligands or the receptors, each of which has been bound to one of the porous adsorptive regions of the biochemical analysis unit, the receptor or the ligand being thereby specifically bound to at least one of the ligands, each of which has been bound to one of the porous adsorptive regions of the biochemical analysis unit, or at least one of the receptors,
15 each of which has been bound to one of the porous adsorptive regions of the biochemical analysis unit,
20 each of which has been bound to one of the porous adsorptive regions of the biochemical analysis unit,

b) forcibly causing a reaction liquid containing a labeled body, which has been labeled with a labeling substance, to flow such that the reaction liquid flows across each of the porous adsorptive regions of the biochemical analysis unit, the
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labeled body being thus specifically bound to the receptor or the ligand having been specifically bound to at least one of the ligands, each of which has been bound to one of the porous adsorptive regions of the biochemical analysis unit, or at least 5 one of the receptors, each of which has been bound to one of the porous adsorptive regions of the biochemical analysis unit, and

10 c) detecting the receptor or the ligand, which has been specifically bound to at least one of the ligands or at least one of the receptors, by the utilization of the labeled body.

10. A method as defined in Claim 1 wherein the specific binding detecting process comprises the steps of:

15 a) subjecting an auxiliary substance-bound receptor or an auxiliary substance-bound ligand, to which an auxiliary substance has been bound, to the specific binding with the ligands or the receptors, each of which has been bound to one of the porous adsorptive regions of the biochemical analysis unit, the auxiliary substance-bound receptor or the auxiliary substance-bound ligand being thereby specifically bound to at 20 least one of the ligands, each of which has been bound to one of the porous adsorptive regions of the biochemical analysis unit, or at least one of the receptors, each of which has been bound to one of the porous adsorptive regions of the biochemical analysis unit, or at least one of the receptors, each of which has been bound to one of the porous adsorptive regions of the biochemical analysis unit,

25 analysis unit,

b) forcibly causing a reaction liquid containing a labeling substance, which is capable of undergoing specific binding with the auxiliary substance, to flow such that the reaction liquid flows across each of the porous adsorptive regions of the biochemical analysis unit, the labeling substance, which is capable of undergoing specific binding with the auxiliary substance, being thus specifically bound to the auxiliary substance-bound receptor or the auxiliary substance-bound ligand having been specifically bound to at least one of the ligands, each of which has been bound to one of the porous adsorptive regions of the biochemical analysis unit, or at least one of the receptors, each of which has been bound to one of the porous adsorptive regions of the biochemical analysis unit, and

15 c) detecting the auxiliary substance-bound receptor
or the auxiliary substance-bound ligand, which has been
specifically bound to at least one of the ligands or at least
one of the receptors, by the utilization of the labeling
substance.

20 11. A method as defined in Claim 2 wherein the specific
binding detecting process comprises the steps of:

a) subjecting an auxiliary substance-bound receptor or an auxiliary substance-bound ligand, to which an auxiliary substance has been bound, to the specific binding with the ligands or the receptors, each of which has been bound to one of the

porous adsorptive regions of the biochemical analysis unit, the auxiliary substance-bound receptor or the auxiliary substance-bound ligand being thereby specifically bound to at least one of the ligands, each of which has been bound to one of the porous adsorptive regions of the biochemical analysis unit, or at least one of the receptors, each of which has been bound to one of the porous adsorptive regions of the biochemical analysis unit,

b) forcibly causing a reaction liquid containing a labeling substance, which is capable of undergoing specific binding with the auxiliary substance, to flow such that the reaction liquid flows across each of the porous adsorptive regions of the biochemical analysis unit, the labeling substance, which is capable of undergoing specific binding with the auxiliary substance, being thus specifically bound to the auxiliary substance-bound receptor or the auxiliary substance-bound ligand having been specifically bound to at least one of the ligands, each of which has been bound to one of the porous adsorptive regions of the biochemical analysis unit, or at least one of the receptors, each of which has been bound to one of the porous adsorptive regions of the biochemical analysis unit, and

c) detecting the auxiliary substance-bound receptor or the auxiliary substance-bound ligand, which has been specifically bound to at least one of the ligands or at least

one of the receptors, by the utilization of the labeling substance.

12. A method as defined in Claim 3 wherein the specific binding detecting process comprises the steps of:

5 a) subjecting an auxiliary substance-bound receptor or an auxiliary substance-bound ligand, to which an auxiliary substance has been bound, to the specific binding with the ligands or the receptors, each of which has been bound to one of the porous adsorptive regions of the biochemical analysis unit, the auxiliary substance-bound receptor or the auxiliary substance-bound ligand being thereby specifically bound to at least one of the ligands, each of which has been bound to one of the porous adsorptive regions of the biochemical analysis unit, or at least one of the receptors, each of which has been bound to one of the porous adsorptive regions of the biochemical analysis unit,

10 b) forcibly causing a reaction liquid containing a labeling substance, which is capable of undergoing specific binding with the auxiliary substance, to flow such that the reaction liquid flows across each of the porous adsorptive regions of the biochemical analysis unit, the labeling substance, which is capable of undergoing specific binding with the auxiliary substance, being thus specifically bound to the auxiliary substance-bound receptor or the auxiliary substance-bound ligand having been specifically bound to at least one of the

15 c) detecting the presence of the labeling substance specifically bound to the auxiliary substance-bound receptor or the auxiliary substance-bound ligand.

20 d) detecting the presence of the labeling substance specifically bound to the auxiliary substance-bound receptor or the auxiliary substance-bound ligand.

25 e) detecting the presence of the labeling substance specifically bound to the auxiliary substance-bound receptor or the auxiliary substance-bound ligand.

ligands, each of which has been bound to one of the porous adsorptive regions of the biochemical analysis unit, or at least one of the receptors, each of which has been bound to one of the porous adsorptive regions of the biochemical analysis unit,

5 and

c) detecting the auxiliary substance-bound receptor or the auxiliary substance-bound ligand, which has been specifically bound to at least one of the ligands or at least one of the receptors, by the utilization of the labeling substance.

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13. A biochemical analysis apparatus, comprising:

i) a reaction vessel, which is provided with a support section for releasably supporting a biochemical analysis unit within the reaction vessel, the biochemical analysis unit being provided with a plurality of porous adsorptive regions, to which ligands or receptors have been bound respectively, the reaction vessel being adapted to perform specific binding of a specific binding substance with the ligands or the receptors, each of which has been bound to one of the porous adsorptive regions of the biochemical analysis unit, the specific binding substance being capable of undergoing the specific binding with the ligands or the receptors, and

ii) flowing means for forcibly causing a reaction liquid containing the specific binding substance to flow within the reaction vessel such that the reaction liquid containing

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the specific binding substance flows across each of the porous adsorptive regions of the biochemical analysis unit,

wherein the apparatus further comprises bubble removing means for performing bubble removing processing for removing bubbles, which are present in the reaction liquid, from the reaction liquid, which is flowing.

14. A biochemical analysis apparatus, comprising:

i) a reaction vessel, which is provided with a support section for releasably supporting a biochemical analysis unit within the reaction vessel, the biochemical analysis unit being provided with a plurality of porous adsorptive regions, to which ligands or receptors have been bound respectively, the reaction vessel being adapted to perform specific binding of a specific binding substance with the ligands or the receptors, each of which has been bound to one of the porous adsorptive regions of the biochemical analysis unit, the specific binding substance being capable of undergoing the specific binding with the ligands or the receptors, and

ii) flowing means for forcibly causing a reaction liquid containing the specific binding substance to flow within the reaction vessel such that the reaction liquid containing the specific binding substance flows across each of the porous adsorptive regions of the biochemical analysis unit,

wherein the apparatus further comprises bubble dissolving means for performing bubble dissolving processing

for dissolving bubbles, which are present in the liquid, on the reaction liquid, which is flowing.

15. An apparatus as defined in Claim 13 wherein the reaction vessel is adapted to perform specific binding of a labeled receptor or a labeled ligand, which has been labeled with a labeling substance, with the ligands or the receptors, each of which has been bound to one of the porous adsorptive regions of the biochemical analysis unit, and

the flowing means forcibly causes a reaction liquid containing the labeled receptor or the labeled ligand to flow such that the reaction liquid flows across each of the porous adsorptive regions of the biochemical analysis unit.

16. An apparatus as defined in Claim 14 wherein the reaction vessel is adapted to perform specific binding of a labeled receptor or a labeled ligand, which has been labeled with a labeling substance, with the ligands or the receptors, each of which has been bound to one of the porous adsorptive regions of the biochemical analysis unit, and

the flowing means forcibly causes a reaction liquid containing the labeled receptor or the labeled ligand to flow such that the reaction liquid flows across each of the porous adsorptive regions of the biochemical analysis unit.

17. An apparatus as defined in Claim 13 wherein the reaction vessel is adapted to perform:

25 a) specific binding of the receptor or the

ligand with the ligands or the receptors, each of which has been bound to one of the porous adsorptive regions of the biochemical analysis unit, and

5 b) specific binding of a labeled body, which has been labeled with a labeling substance, with the receptor or the ligand, which has been specifically bound to at least one of the ligands or at least one of the receptors, and

10 the flowing means forcibly causes a reaction liquid containing the labeled body to flow such that the reaction liquid flows across each of the porous adsorptive regions of the biochemical analysis unit.

18. An apparatus as defined in Claim 14 wherein the reaction vessel is adapted to perform:

15 a) specific binding of the receptor or the ligand with the ligands or the receptors, each of which has been bound to one of the porous adsorptive regions of the biochemical analysis unit, and

20 b) specific binding of a labeled body, which has been labeled with a labeling substance, with the receptor or the ligand, which has been specifically bound to at least one of the ligands or at least one of the receptors, and

25 the flowing means forcibly causes a reaction liquid containing the labeled body to flow such that the reaction liquid flows across each of the porous adsorptive regions of the biochemical analysis unit.

19. An apparatus as defined in Claim 13 wherein the reaction vessel is adapted to perform:

a) specific binding of an auxiliary substance-bound receptor or an auxiliary substance-bound ligand, to which an auxiliary substance has been bound, with the ligands or the receptors, each of which has been bound to one of the porous adsorptive regions of the biochemical analysis unit, and

b) specific binding of a labeling substance, which is capable of undergoing specific binding with the auxiliary substance, with the auxiliary substance-bound receptor or the auxiliary substance-bound ligand having been specifically bound to at least one of the ligands, each of which has been bound to one of the porous adsorptive regions of the biochemical analysis unit, or at least one of the receptors, each of which has been bound to one of the porous adsorptive regions of the biochemical analysis unit, and

the flowing means forcibly causes a reaction liquid containing the labeling substance, which is capable of undergoing the specific binding with the auxiliary substance, to flow such that the reaction liquid flows across each of the porous adsorptive regions of the biochemical analysis unit.

20. An apparatus as defined in Claim 14 wherein the reaction vessel is adapted to perform:

a) specific binding of an auxiliary substance-bound receptor or an auxiliary substance-bound ligand,

to which an auxiliary substance has been bound, with the ligands or the receptors, each of which has been bound to one of the porous adsorptive regions of the biochemical analysis unit, and

5 b) specific binding of a labeling substance,
which is capable of undergoing specific binding with the auxiliary
substance, with the auxiliary substance-bound receptor or the
auxiliary substance-bound ligand having been specifically bound
to at least one of the ligands, each of which has been bound
to one of the porous adsorptive regions of the biochemical
10 analysis unit, or at least one of the receptors, each of which
has been bound to one of the porous adsorptive regions of the
biochemical analysis unit, and

the flowing means forcibly causes a reaction liquid containing the labeling substance, which is capable of undergoing the specific binding with the auxiliary substance, to flow such that the reaction liquid flows across each of the porous adsorptive regions of the biochemical analysis unit.